Cable Type

The HiPer DSP T1/E1 NIC accepts cabling that meets the following specifications:

Table 9 HiPer DSP NIC Cabling Specifications

Data transfer rate	1.544 Mbps (T1)/2.048 Mbps (E1)
Transmission medium	100 ohm 4-wire unshielded twisted pair (UTP) cable or 75 Ohm Coax
Connector	RJ-48C Modular Jack
Wire type	0.5mm or 24 AWG twisted pairs
Maximum cable length	2 km (6000 ft) of 22 AWG

Span Configurations

The Media Gateway supports one T1/E1 span per HiPer DSP NIC/NAC pair. The spans must be installed and run to within 1 m (36 in.) of the chassis.

We recommend locating a junction box near the Gateway that contains one RJ48C socket per HiPer DSP. Locate this junction box within about 1 m (36 in.) of the chassis. Use short straight-through cables to complete the circuit from the junction box to the HiPer DSP T1/E1 NIC.

Ethernet Requirements

This section contains the physical requirements for connecting the Media Gateway to your voice and management networks. Requirements are outlined in the following subsections:

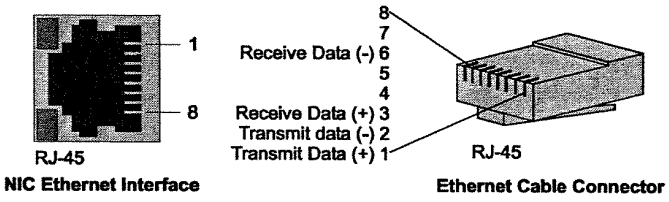
- HiPer NMC
- Edge Server Card

Ethernet Interfaces

HiPer NMC

HiPer NMC ethernet interfaces have the following pinouts:

Figure 18 HiPer NMC Ethernet Interface Pinout



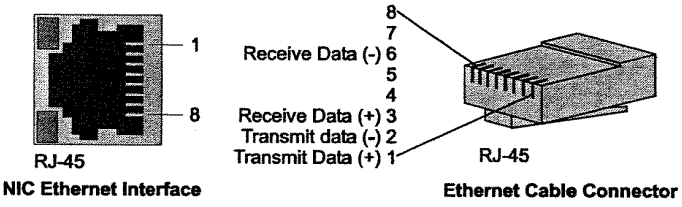
Cable Type HiPer NMC ethernet NICs accept cabling that meets the following specifications:

Table 10 HiPer NMC Cabling Specifications

Data transfer rate	10/100 Mbps Auto-negotiated
Access scheme	CSMA/CD (Carrier Sense Multiple Access with Collision Detection)
Transmission medium	Unshielded Twisted Pair (UTP) cable type CAT3 or CAT5 (CAT5 recommended) for 10Base-T applications, CAT5 for 100Base-TX
Maximum lobe distance	100 m (328 ft)
Connector	8-position modular jack, Stewart 88-360808 or equivalent
Wire type	0.5 mm or 24 AWG twisted pairs
Maximum cable length	100 m (328 ft) with standard receiver squelch levels
Loss	11.5 dB per100 m for frequency range of 5–10 MHz
Impedance	85-111 ohm for frequency range of 5-10 MHz
Propagation delay	5.7 ns/m
Cabling	Use a straight-through cable for multiport repeater applications (If two-node network: use a crossover cable)
Nominal direct current resistance	Center conductor 24 AWG (7 strands 32 AWG); 0.61 mm diameter 77.8 ohm/km(23.7 ohm/1000 ft) Shield 50.9 ohm/km(15.5 ohm/1000 ft)
Outside diameter	6.73 mm(0.265 in.)
Capacitance between conductors	98 picofarad/m(30 picofarad/ft)

Edge Server Card

Edge server ethernet interfaces have the following pinouts:



Cable Type Edge server ethernet NICs accept cabling that meets the following specifications:

Table 11 Edge Server Cabling Specifications

Data transfer rate	10/100 Mbps Auto-negotiated
Access scheme	CSMA/CD (Carrier Sense Multiple Access with Collision Detection)
Transmission medium	Unshielded Twisted Pair (UTP) cable type CAT3 or CAT5 (CAT5 recommended) for 10Base-T applications, CAT5 for 100Base-TX
Maximum lobe distance	100 m (328 ft)
Connector	8-position modular jack, Stewart 88-360808 or equivalent
Wire type	0.5mm or 24 AWG twisted pairs
Maximum cable length	100 m (328 ft) with standard receiver squelch levels
Loss	11.5 dB per100 m for frequency range of 5–10 MHz
Impedance	85-111 ohm for frequency range of 5-10 MHz
Propagation delay	5.7 ns/m
Cabling	Use a straight-through cable for multiport repeater applications (If two-node network: use a crossover cable)
Nominal direct current resistance	Center conductor 24 AWG (7 strands 32 AWG); 0.61 mm diameter 77.8 ohm/km(23.7 ohm/1000 ft) Shield 50.9 ohm/km(15.5 ohm/1000 ft)
Outside diameter	6.73 mm(0.265 in.)
Capacitance between conductors	98 picofarad/m(30 picofarad/ft)

TECHNICAL SPECIFICATIONS

This chapter contains technical specifications for the CommWorks IP Telephony Platform and for the Total Control components.

This chapter contains technical specifications for the following components:

Regulatory Compliance

This section describes US and Canadian regulatory compliance.

Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada Canadian Installations

The Industry Canada (IC), formerly Canadian Department of Communications, label identifies certified equipment. Certification means that equipment meets certain telecommunications network protective, operational, and safety requirements. The department does not guarantee the equipment will operate to the purchaser's satisfaction.

Before installing this equipment, be sure a connection to a local telecommunications company is permissible. Install equipment using an acceptable method. Be aware, however, that compliance with these conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by a user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment. For protection, be sure that electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: *Do not attempt to make such connections; contact the appropriate electrical inspection authority or electrician.*

Certifications for individual devices are listed under the specifications for each device.

CommWorks System Specifications

The following table contains system-level specifications for the CommWorks Gateway.

Table 12 System Specifications

Specifications	Description		
Supported CODECs	G.711:	64 Kbps	20 ms
	G.723.1:	6.3 Kbps	30 ms
	G.729A	7 Kbps	10 ms
Compression	RTP/UDP/IP header compression (Van Jacobson)		
Capacity	(see Chapter 1)		
Echo Cancellation	G.168 compliant		
Jitter Compensation	Jitter buffer size: 0–240 ms		

Total Control Specifications

Chassis Specifications

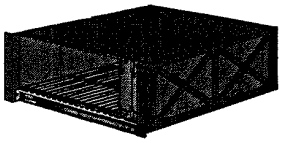


Table 13 Chassis Specifications

Specifications	Description
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified. This product complies with the European EMC directive and bears the "CE" mark.
Capacity	Houses up to 17 front-loaded application cards (NACs), and their respective rear-loaded interface cards (NICs); Two Power Supply Unit/Power Supply Interface combinations (PSU/PSIs); the second optional for full redundancy; and, One fan tray assembly.
Midplane Data Buses	
	Packet bus:
	NAC management bus:
	NIC management bus:
	TDM bus (NAC - NAC):
	TDM bus (NIC - NAC):
	PCI bus (NIC - NAC):
	ISA bus (NIC - NAC):
Environment	Shipping and storage
	Temperature:-25–75° C (-13–167° F)
	Relative humidity:0–95% (non-condensing)
	Operating
	Temperature:0–40° C (32–104° F)
	Relative humidity:0–95% (non-condensing)
Dimensions	Length:47.22 cm(18.59 in.)
	Width:48.26 cm(19.00 in.)
	Height:22.15 cm(8.71 in.)

130A Power Supply Specifications

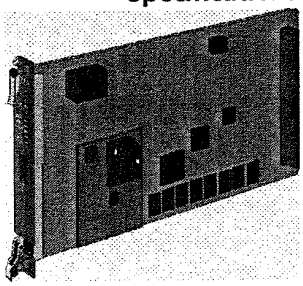


Table 14 130A Power Supply Specifications

Specifications	Description
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified. This product complies with the European EMC directive and bears the "CE" mark.
Power Supply	Auto-shutoff for overvoltage, over temperature, and short-circuit protection Automatic load sharing and redundant switchover when two PSUs are installed. Requires a separate power source for each PSU.
Power Requirements	Specified range: AC PSUAC input voltage range: 90 to 264 V AC @ 47-63 Hz DC PSUDC input voltage range: -40 to -60 V DC
Maximum PSU Output Power	280 watts +5.2VDC130.0 A -5VDC2.0 A +12.2VDC5.5 A -12.2VDC5.5 A
Power Supply Input	Typical input power DC to DCAC to AC 130 A PSU1095 watts1080 watts Maximum input current* DC to DCAC to AC 130 A PSU30 A15 A * Steady state, full load input current is rated at 25A.
Environment	Shipping and storage Temperature:-40–60° C (-40–140° F) Relative humidity:10–95% (non-condensing) Operating Temperature:0–40° C (32–104° F) Relative humidity:20–80% (non-condensing)
Dimensions	Length:32.89 cm(12.95 in.) Width:1.98 cm(0.78 in.) Height:17.48 cm(6.88 in.)

Fan Tray Specifications

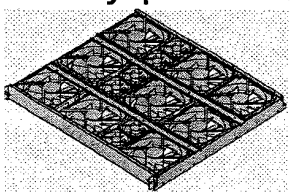


Table 15 Fan Tray Specifications

Specifications	Description
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified. This product complies with the European EMC directive and bears the "CE" mark.
Air Flow (Total)	948 CFM
Current Draw	5.2 VDC @ 3.6A typical maximum* * "Typical maximum" refers to the maximum current draw for most typical configurations.
Environment	Shipping and storage Temperature:-40° C to 70° C at 65% relative humidity Operating Temperature:-40° C to 70° C at 65% relative humidity
Dimensions	Length:47.22 cm(18.59 in.) Width:48.26 cm(19.00 in.) Height:4.27 cm(1.68 in.)

CAUTION: *Total Control chassis must be installed with a minimum of 1.7 in. clearance between each unit.*

HiPer Network Management Card (NMC) NAC Specifications

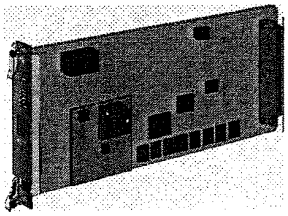


Table 16 HiPer NMC NAC Specifications

Specifications	Description
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified.
	EN 55022, Class A
	EN 50082
Processor	Pentium processor (P5) at 133 MHz
Operational Memory	Dynamic Random Access Memory (DRAM): 16 Mbytes
	Flash Memory: 8 MB
Data Retention method	Clock and CMOS retained by 3V lithium (coin) cell
	Retention: up to 10 years (powered unit), 3 years in non-powered unit
Current Draw	+5.2 VDC @ 4.3A typical maximum*
	* "Typical maximum" refers to the maximum current draw for most typical configurations.
Environment	Shipping and storage
	Temperature:-25–75° C (-13–167° F)
	Relative humidity:0–100% (non-condensing)
	Operating
	Temperature:0–40° C (32–104° F)
	Relative humidity:0–95% (non-condensing)
Dimensions	Length:32.89 cm(12.95 in.)
	Width:2.01 cm(.79 in.)
	Height:17.53 cm(6.90 in.)

10/100 Ethernet Aux I/O NIC (for HiPer NMC) Specifications

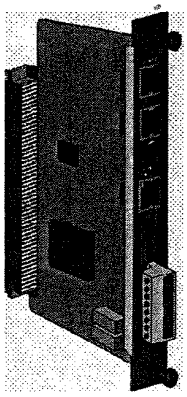


Table 17 10/100 Ethernet Aux I/O NIC Specifications

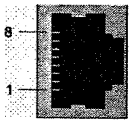
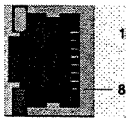
Specifications	Description		
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified. EN 55022, Class A EN 50082		
Interface Specifications			
	Serial Port (applies to both EIA-232 and WAN)		
		Electrical:	EIA RS–232–D standard
		Connector:	RJ–45, 8-position modular jack
		Pinout: 	1 = DSR 2 = DCD 3 = DTR 4 = Ground 5 = Receive data 6 = Transmit data 7 = CTS 8 = RTS
		Configuration:	DTE
		Transmission method:	Unbalanced RS–232, 1-stop bit, no parity
		Transmission rate:	57.6 Kbps maximum
	Ethernet 10Base-T/100Base-Tx		
		Data transfer rate:	10/100 Mbps (auto-negotiated)
		Connector:	8-position modular jack (Stewart 88-360808 or equivalent)
		Pinout: 	1 = Transmit + 2 = Transmit - 3 = Receive + 4 = Ground 5 = Ground 6 = Receive - 7 = Ground 8 = Ground
		Accessing scheme:	CSMA/CD (Carrier Sense Multiple Access with Collision Detection)
		Topology:	Star-wired hub (using multiport repeater)
		Maximum nodes:	Limited only by repeater used
		Transmission medium:	Unshielded twisted pair (UTP) **10Base-T:** CAT3 or CAT5 (CAT5 recommended) **100Base-Tx:** CAT5 only
		Network lobe distance:	100 m (328 ft.) suggested maximum. Longer cabling can be used at the expense of reduced receiver squelch levels.

Table 17 10/100 Ethernet Aux I/O NIC Specifications (continued)

Specifications	Description
Current Draw	+5.2 VDC @ 0.6A typical maximum*
	* "Typical maximum" refers to the maximum current draw for most typical configurations.
Environment	Shipping and storage
	Temperature:-25–75° C (-13–167° F)
	Relative humidity:0–100% (non-condensing)
	Operating
	Temperature:0–40° C (32–104° F)
	Relative humidity:0–95% (non-condensing)
Dimensions	Length:12.07 cm(4.75 in.)
	Width:2.01 cm(.79 in.)
	Height:17.53 cm(6.90 in.)

Edge Server NAC Specifications

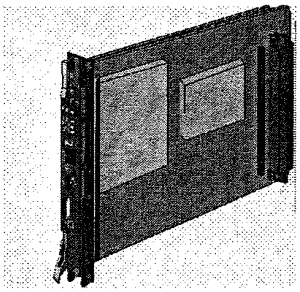


Table 18 Edge Server NAC Specifications

Specifications	Description		
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified.		
Processor	AMD-K6-III, 450MHz		
Hard Drive	6GB capacity		
Operational memory	256MB of 100MHz built-in SDRAM and 2 DIMM sockets available for up to 768MB		
Data retention method	Clock, CMOS and chassis configuration values retained		
	Type		3V Lithium Cell
	Retention		3 years
Operating system	Microsoft Windows 2000		
Keyboard	PS/2 compatible		
Mouse	PS/2 compatible		
Video	SVGA compatible, 800x600, 16 color		
Midplane connector	180-pin DIN		
NAC management bus	512 kHz (data clock)		
(continued)			
PCI bus	25/33 MHz		
Physical dimensions	Length		32.89 cm(12.95 in.)
	Width		4.01 cm(1.58 in.)
	Height		17.53 cm(6.90 in.)
Power requirements		Typical	Maximum
	+5V DC	2.8 A	3.5 A
	-5V DC	8 mA	20 mA
	+12V DC	29 mA	50 mA
	-12V DC	16 mA	50 mA
Environment	*Shipping and storage*		
	Temperature		0–65 °C (32–149 °F)
	Relative humidity		5–95% (non-condensing)
	Operating		
	Temperature		5–40 °C (41–104 °F)
	Relative humidity		8–90% (non-condensing)

CAUTION: *Never install a edge server card in a chassis without a fan tray! Heat damage to the edge server card's components could result.*

EdgeServer Pro NAC Specifications

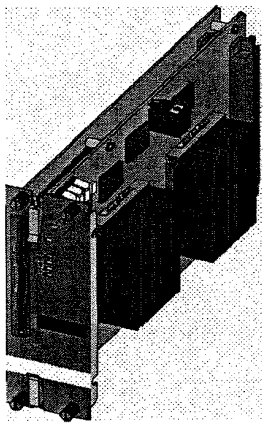


Table 19 EdgeServer Pro NAC Specifications

Specifications	Description
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified.
	Electromagnetic compatibility (EMC):
	FCC Part 15 Class A, Radiated and Conducted
	EN 55022, EMI
	EN 55082, EMC
	Product safety:
	UL1950
	EN 60950
Processor	Intel Pentium Pro 200 MHz with 256k cache (standard configuration)
	Socket 8 for upgrade to second processor
Operational Memory	DRAM:
	4 x 168-pin DIMM sockets
	64MB (standard configuration for single processor) up to 1GB
	3.3V unbuffered EDO, 60ns DRAM
	Gold plated
	ECC
	VRAM: 1 MB (standard configuration)
Data Retention Method	Clock, CMOS and chassis configuration values retained by 3V lithium (coin) cell (CR2032), 192 mA hours
	Retention: up to 10 years (powered unit), 3 years in non-powered unit
Operating System	Microsoft Windows NT Server 4.0 with Service Pack 3
Video	SVGA compatible, 1024 x 768, 256 color
Disk Drives	Disk size/storageAccess rate
	IDE hard drive(s)2.5" / ≥2GB≤12ms
	Floppy drive3.5" / 1.44MB94ms (avg.)
Current Draw	+5.2 VDC @ 10.5A single processor, typical maximum*
	* "Typical maximum" refers to the maximum current draw for most typical configurations.
Environment	Shipping and storage
	Temperature:0–65° C (32–149° F)
	Relative humidity:5–95% (non-condensing)
	Operating
	Temperature:5–40° C (41–104° F)
	Relative humidity:8–80% (non-condensing)
Dimensions	Length:32.89 cm (12.95 in.)
	Width:6.03 cm(2.37 in.)
	Height:17.53 cm(6.90 in.)

CAUTION: Never install an EdgeServer Pro card in a chassis without a fan tray — heat damage to the card's components could result.

Peripheral NIC Specifications

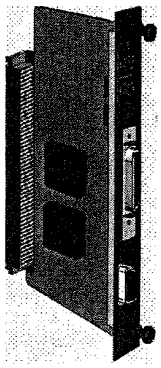


Table 20 Peripheral NIC Specifications

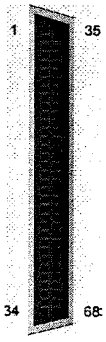
Specifications	Description	
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified	
Keyboard Port	Connector:	PS/2 compatible, 6 pin mini DIN (female)
	Pinout: 	1 = Key data 2 = Not connected 3 = Ground 4 = Power, +5VDC 5 = Key clock 6 = Not connected
Mouse Port	Connector:	PS/2 compatible, 6 pin mini DIN (female)
	Pinout: 	1 = Mouse data 2 = Not connected 3 = Ground 4 = Power, +5VDC 5 = Mouse clock 6 = Not connected
Video Port	Connector:	DB-15 video (female)
	Pinout: 	1 = Red video (75 ohm, 0.7 V p-p) 2 = Green video (75 ohm, 0.7 V p-p) 3 = Blue video (75 ohm, 0.7 V p-p) 5 = Ground 6 = Red ground 7 = Green ground 8 = Blue ground 10 = Sync ground 13 = Horizontal sync (or composite sync) 14 = Monitor ID bit 3 All others = not connected.
SCSI Port	Connector:	Ultra-wide SCSI, 68 pin (female)
	Pinout: 	1-16 = Ground 17 = TERMPWR 18 = TERMPWR 19 = Not connected 20-34 = Ground 35 = D12 36 = D13 37 = D14 38 = D15 39 = DP1 40 = D0 41 = D1 42 = D2 43 = D3 44 = D4 45 = D5 46 = D6 47 = D7 48 = DP0 49 = Ground 50 = Ground 51 = TERMPWR 52 = TERMPWR 53 = Not connected 54 = Ground 55 = ATN 56 = Ground 57 = BSY 58 = ACK 59 = Reset 60 = MSG 61 = SEL 62 = CD 63 = REQ 64 = IO 65 = D8 66 = D9 67 = D10 68 = D11

Table 20 Peripheral NIC Specifications (continued)

Specifications	Description
Current Draw	+5.2 VDC @ 1.5A typical maximum*
	* "Typical maximum" refers to the maximum current draw for most typical configurations.
Environment	Shipping and storage
	Temperature:-25–75° C (-13–167° F)
	Relative humidity:0–100% (non-condensing)
	Operating
	Temperature:0–40° C (32–104° F)
	Relative humidity:0–95% (non-condensing)
Dimensions	Length:12.07 cm(4.75 in.)
	Width:2.01 cm(0.79 in.)
	Height:17.53 cm(6.90 in.)

PCI Dual Ethernet NIC Specifications

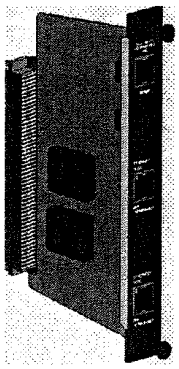


Table 21 PCI Dual Ethernet NIC Specifications

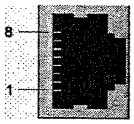
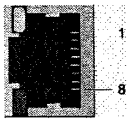
Specifications	Description		
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified		
	EMC:		
	CISPR 22, Class B, Radiated and Line Conducted		
	FCC Part 15, Class A, Radiated and Line Conducted		
	VDE 0878		
	EN 55022, EMI		
	EN 55022, Electrostatic Discharge		
	EN 55022, Immunity (Susceptibility), radiated and line conducted		
	Mains Safety:		
	UL 1950, as applicable in this case		
	Final Product will be evaluated to UL 1950		
	CSA approved C22.2 No. 0.7; C22.2 No. 225-M 1986; CSA 950		
	IEC 950, IEC 380		
	EN 41003, EN 60950		
Interface Specifications			
	Serial Port (RS-232)		
		Electrical:	RS-232-C (EIA/TIA-232-E standard
		Connector:	RJ–45, 8-position modular jack
		Pinout: 	1 = DSR 2 = DCD 3 = DTR 4 = Ground 5 = Receive data 6 = Transmit data 7 = CTS 8 = RTS
		Configuration:	DTE
		Transmission method:	Unbalanced RS–232, 1-stop bit, no parity
		Transmission rate:	115,200 bps maximum

Table 21 PCI Dual Ethernet NIC Specifications (continued)

Specifications	Description		
	Ethernet 10Base-T/100Base-Tx port		
		Data transfer rate:	10/100 Mbps (auto-negotiated)
		Connector:	8-position modular jack (Stewart 88-360808 or equivalent)
		Pinout: 	1 = Transmit + 2 = Transmit - 3 = Receive + 4 = Ground 5 = Ground 6 = Receive - 7 = Ground 8 = Ground
		Accessing scheme:	CSMA/CD (Carrier Sense Multiple Access with Collision Detection)
		Topology:	Star-wired hub (using multiport repeater)
		Maximum nodes:	Limited only by repeater used
		Transmission medium:	Unshielded twisted pair (UTP) **10Base-T:** CAT3 or CAT5 (CAT5 recommended) **100Base-Tx:** CAT5 only
		Network lobe distance:	100m (328 ft.) suggested maximum. Longer cabling can be used at the expense of reduced receiver squelch levels.
Current Draw	+5.2 VDC @ 2.0A typical maximum*		
	* "Typical maximum" refers to the maximum current draw for most typical configurations.		
Environment	Shipping and storage		
	Temperature:-25–75° C (-13–167° F)		
	Relative humidity:0–100% (non-condensing)		
	Operating		
	Temperature:0–40° C (32–104° F)		
	Relative humidity:0–95% (non-condensing)		
Dimensions	Length:12.07 cm(4.75 in.)		
	Width:2.01 cm(.79 in.)		
	Height:17.53 cm(6.90 in.)		

Edge Server SCSI NIC Specifications

Table 22 Edge Server SCSI NIC Specifications

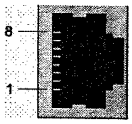
Specifications	Description		
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified		
	EMI/EMC:		
	FCC Part 15, Class A, Radiated and Line Conducted		
	EN 55022, Class A		
	EN 55082		
	VCCI Class A		
	Austel AS/NZS 3548		
	Main Safety:		
	UL 1950, as applicable in this case		
	C-UL		
	EN 60950		
	IEC 950		
	CB Scheme		
Interface Specifications			
	Serial Port (RS-232)		
		Electrical:	RS-232-C (EIA/TIA-232-E standard
		Connector:	RJ–45, 8-position modular jack
		Pinout: 	1 = DSR 2 = DCD 3 = DTR 4 = Ground 5 = Receive data 6 = Transmit data 7 = CTS 8 = RTS
		Configuration:	DTE
		Transmission method:	Unbalanced RS–232, 1-stop bit, no parity
		Transmission rate:	115,200 bps maximum
SCSI Port	Connector:		Ultra-wide SCSI, 68 pin (female)

Table 22 Edge Server SCSI NIC Specifications (continued)

Specifications	Description
	Pinout:  1-16 = Ground; 50 = Ground 17 = TERMPWR; 51 = TERMPWR 18 = TERMPWR; 52 = TERMPWR 19 = Not connected; 53 = Not connected 20-34 = Ground; 54 = Ground 35 = D12; 55 = ATN 36 = D13; 56 = Ground 37 = D14; 57 = BSY 38 = D15; 58 = ACK 39 = DP1; 59 = Reset 40 = D0; 60 = MSG 41 = D1; 61 = SEL 42 = D2; 62 = CD 43 = D3; 63 = REQ 44 = D4; 64 = IO 45 = D5; 65 = D8 46 = D6; 66 = D9 47 = D7; 67 = D10 48 = DP0; 68 = D11 49 = Ground
Power Requirements	12V at 40 mA and 5V at 750 mA The 3.3V supply is regulated from the 5V supply on the edge server NIC.
Environment	Non-Operational Temperature:-30 to 90° C, (-22 to 194° F) Relative humidity:0–95% (non-condensing at 40° C) Operational Temperature:0–40° C, (32–104° F) Relative humidity:0–95% (non-condensing)
Dimensions	Length:12.07 cm(4.75 in.) Width:2.01cm(.79 in.) Height:17.53 cm(6.90 in.)

HiPer DSP NAC Specifications

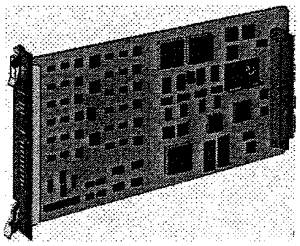


Table 23 HiPer DSP NAC Specifications

Specifications	Description	
Certification	Complies with FCC Part 15 Class A, FCC Part 68, UL-listed, CSA-approved, and IC-certified.	
	T1 HiPer DSP	
	Electromagnetic compatibility (EMI/RFI):	FCC 15A, EN55022 A
	Product safety:	UL 1950, C-UL, EN 60950, JATE
	Telco:	FCC 68, IC CS-03
	E1 HiPer DSP	
	Electromagnetic compatibility (EMI/RFI):	FCC 15A, EN55022 A, AUSTEL, VCCI
	Product safety:	UL 1950, C-UL, EN 60950, AUSTEL
	Immunity:	EN 50082
	Telco:	CTR4, FCC 68, IC CS-03
Processor	Board Manager System:	PowerPC RISC CPU
	Application Co-Processor System:	Dual PowerPC RISC CPUs
Operational Memory	Dynamic Random Access Memory (DRAM): 16 Mbytes	
	Static Random Access Memory (SRAM): 256Kbytes RISC memory, 2Mbytes shared memory, 12/16 DSPs x 64Kytes	
	Cache: 16Kbytes (program)/8Kbytes (data) for each RISC processor, total 32Kbytes (program)/16Kbytes (data)	
	Flash Memory: 2 Mbytes	
Data Retention Method	Flash memory	
Current Draw	T1 HiPer DSP	
	+5.2 V DC @ 4.3A typical maximum*	
	E1 HiPer DSP	
	+5.2 V DC @ 4.8A typical maximum*	
	* "Typical maximum" refers to the maximum current draw for most typical configurations.	
Environment	Shipping and storage	
	Temperature:-25–75° C (-13–167° F)	
	Relative humidity:0–100% (non-condensing)	
	Operating	
	Temperature:0–40° C (32–104° F)	
	Relative humidity:0–95% (non-condensing)	
Dimensions	Length:32.89 cm(12.95 in.)	
	Width:2.01 cm(.79 in.)	
	Height:17.53 cm(6.90 in.)	

HiPer DSP T1/E1 NIC Specifications

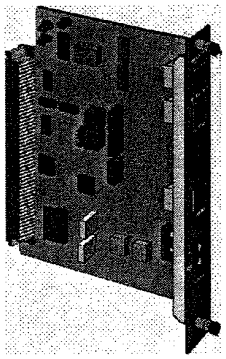


Table 24 HiPer DSP T1/E1 NIC Specifications

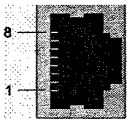
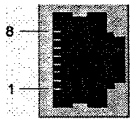
Specifications	Description		
Certification	See HiPer DSP NAC certification.		
Serial Ports (Console and Aux)	Electrical specification	RS-232-C (EIA/TIA-232-E standard)	
	Connector	RJ-45, 8 position modular jack	
	Pinout: 	1 = DSR 2 = DCD 3 = DTR 4 = Ground 5 = Receive data 6 = Transmit data 7 = CTS 8 = RTS	
	Configuration	DTE	
	Transmission method	Unbalanced RS-232	
	Transmission rate		
	Console port:	9600 bps maximum	
	Auxiliary port:	115,200 bps maximum	
Span 1 Port	Electrical specification:		T1/E1 span line interface
	Connector:	RJ-48C, 8-position modular jack	
	Pinout: 		1 = Receive ring 2 = Receive tip 4 = Transmit ring 5 = Transmit tip 6 = Transmit data 7 = CTS 8 = RTS
	Line rate:	T1: 1.544 Mbps	E1: 2.048 Mbps
	Input signal:	DS1 to -34 dB typical per AT&T Publication 64211	
	Output signal:	DS1 with line buildout of 0, -7.5, -15, or -22.5 dB (selectable)	
	Loop timing source:	Automatic fallback to alternate source	
	Line loopback support:	Telco-initiated per AT&T Publication 54016	
	Specifications:	ANSI T1.403	TBR-12
		ANSI T1.408	TBR-13
		ITU G.703	ETSI 300-166
		ITU G.736	ETSI 300-233
		ITU G.775	I.431/ETSI ETS 300 011
		ITU G.823	AT&T Publication 62411

Table 24 HiPer DSP T1/E1 NIC Specifications (continued)

Specifications	Description		
		Channelized T1 (CH T1) and T1/PRI Application	*Framing*:
			SF (Super Frame also known as D4)
			ESF (Extended Super Frame)
			Line coding:
			CH T1:
			B8ZS (Binary Eight Zero Code Suppression)
			AMI (Alternate Mark Inversion)
			ZCS (Zero Code Suppression)
			T1/PRI:
			B8ZS (Binary Eight Zero Code Suppression)
		E1/PRI Application	*Framing*:
			CEPT CCS without CRC-4 (used with VN-4 and some NET5 countries)
			CEPT CCS with CRC-4 (used with NET 5 countries)
			Line coding:
			HDB3 (High Density Bipolar 3 Zeroes)
	Interfaces:	DS1 (Long Haul applications): Connecting CPE equipment to the Telco's T1 or Smart Jack up to 6000 feet away.	
		DSX-1 (Short Haul applications): Connecting CPE equipment to the Telco's T1 jack up to 600 feet away.	
Monitor Port	Connector:	Bantam Jack	
	Configuration:	Non-intrusive Bridge Mode	
	Isolation Resistance:	430 ohms	
	Attenuation:	-6 to -10 dB	

Table 24 HiPer DSP T1/E1 NIC Specifications (continued)

Specifications	Description
Current Draw	+5.2 VDC @ 600mA typical maximum*
	* "Typical maximum" refers to the maximum current draw for most typical configurations.
Environment	Shipping and storage
	Temperature:-25–75° C (-13–167° F)
	Relative humidity:0–100% (non-condensing)
	Operating
	Temperature:0–40° C (32–104° F)
	Relative humidity:0–95% (non-condensing)
Dimensions	Length:12.07 cm(4.75 in.)
	Width:2.01 cm(0.79 in.)
	Height:17.53 cm(6.90 in.)

GLOSSARY

This appendix lists acronyms and terminology used in the CommWorks VoIP application.

A-Link Access link. SS7 Signaling link used to connect the Signaling Transfer Point (STP) and Signaling Switch Point (SSP).

ACF Admission Confirm—This is a call flow message.

AMI Alternate Mark Inversion—A line encoding scheme for transmitting data bits over T1 and E1transmission systems.

ANI Automatic Number Identification—The billing number of the person making the phone call. ANI allows the calling party to be billed without having to enter a PIN.

ARJ Admission Reject—This is a call flow message.

ARQ Admission Request—This is a call flow message.

AIS Alarm Indication Signal—Formerly referred to as a 'blue alarm' or 'blue signal'. This is a signal that is created when a maintenance alarm indication has been activated. This signal is transmitted downstream informing that an upstream failure has been detected.

AS Autonomous System—An independent system.

AUX Auxiliary—Backup or acting as a redundancy on the system.

B8ZS Binary Eight Zero Code Suppression—Line-code type, used on T1 and E1 circuits. A special code replaces any eight consecutive zeros that are sent over the link. This code is then interpreted at the remote end of the connection. This technique guarantees ones density independent of the data stream. Sometimes this is referred to as bipolar 8-zero substitution.

BHCA Busy Hour Call Attempts—The number of calls attempted within 60 minutes during the busiest times during the day.

CC Country Code—When calling outside of the country, the called number consists of the country code, identifying the country where the person to be called resides and a NSN (National Significant Number). The code of the country is the first three digits dialed.

CCS Common Channel Signal—This is a Bellcore definition: A network architecture which uses Signalling System 7 (SS7) protocol for the exchange of information between telecommunications nodes and networks on an out-of-band basis.

CD Collision Detection—A process where a simultaneous transmission has taken place. Workstations can determine if this has happened if they do not receive an acknowledgement from the receiving station within a certain amount of time. When this occurs, the workstation will try again.

CDR Call Detail Record—Information gather during the call used later for billing purposes.

CE Connection Endpoint—A terminator at one end of a layer connection within SAP.

CEPT Conférence des administrations Européenes des Postes et Télécommunications (European Conference of Postal and Telecommunications Administrations)—A standards committee in Europe for the telecommunications industry.

CHS Cylinder-head Sector—The method of identifying a given location on a hard drive.

CISPR International Special Committee on Radio Interference

CLI Command Line Interface—A software interface allowing the user to interact with the operating system by entering commands and optional arguments. The UNIX operating system runs at the command line from a shell prompt or a shell script.

CMOS Complementary Metal Oxide Semiconductor

CNG Comfort Noise Generation—The process of adding white noise to the voice channel so the people know the connection is still good when neither party is talking.

CO Central Office—The telephone company facility where the request for service comes through the switching equipment and the requests for service gets routed.

CommWorks IP Telephony System A total system of hardware and software components that route telephone calls and data over an IP based network (VoIP).

CPE Customer Presence Equipment—A piece of equipment that is attached to a telephone network. This equipment would be the terminal equipment, telephones, key systems, modems, video conferencing devices and so on.

CPU Central Processing Unit—The part of the computer that executes the commands and performs the logic.

CRC Cyclic Redundancy Check—The process to determine if the data was received properly.

CSA 1. Call Path Services Architecture—An architecture developed by IBM which defines the protocols that allow communications between the telephones switches and computers. 2. Carrier Serving Area—A method used to categorize the local loops by length, gauge, and subscriber distribution for maximum service and cost efficiency.